

Lost in Translation? *compromises and assumptions in lighting programming syntaxes.*

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This paper introduces the programming styles commonly found in performance lighting practice and discusses the impact that digital programming practice has on the creative visualisation and realisation of the lighting designers work.

Facilitating creativity in digital programming practice, which demands a logical and numerical structure to its input language, is a challenge that has only relatively recently been taken up by manufacturers. In the profession lighting designers and programmers are often two separate people, each with a particular skill set. The designer will sit with the programmer and together they translate the creative intention into numbers and code that then seeks to render the design through lighting systems. This paper investigates the impact of this need for the translation of the creative idea into the language of lighting control, what is lost, what may be compromised. It seeks to suggest what may be gained by further development of creative and graphical user interfaces in lighting control.

Through a discussion of philosophical notions such as Borgmann's 'technological device' and Dasgupta's assertions regarding the nature of the relationship between craft and engineering, the challenges facing lighting designers and programmers are presented and the mechanisms of performance lighting laid bare.

Short Bio - Natalie Rowland

Natalie's research is focused on digital choreography and lighting, and the ways in which light can become part of the choreographic environment. Research to date has investigated the relationships between lighting and the dancer and the choreographic process, as well as exploring the development of mobile technologies as a performance and choreographic tool.

Introduction

Using a lighting desk with a Graphical User Interface for the first time was a liberating experience. Having been brought up with numerical syntax consoles such as the ETC Expression and Strand 520, I have been used to designing first and programming second. This practise of thinking creatively and then thinking numerically has dictated the methodology of lighting for decades. Working in any other way often feels alien to designers and programmers who have worked in the industry over the past thirty years.

Allow me to explain.

My first experience of programming intelligent lighting fixtures (lights with more attributes than simply intensity) was a tedious affair. Faced with a console that understood channel data in a linear fashion, if I wanted lights to move in a circular motion I would have to plot several points within the circle and then set the crossfade times between the cues to achieve the desired speed – kind of like dot-to-dot drawing with lights. When programming in this way you don't think so much about the circle as the pathway, and you think of that in terms of x/y co-ordinates, numerical values that are then applied next to other numbers. The shape, flow and aesthetic of the state appears later – it is not present during programming, for now you focus only on numbers...

I can only assume that is why the lighting profession developed with lighting designers and lighting programmers so often being two different people. Coming into the profession, I imagined that if you designed the lights you completed the programming too as an extension of the creation process. I soon learned that, where budget allowed, two people were involved. Reflecting now following many productions on both sides of the task and with several different consoles, I think I understand the reason.

Craft and Engineering

The creative mind and the numerical, logical mind are not the same and we are not always encouraged to use the two together.

Subrata Dasgupta makes this distinction when considering the difference between craft and engineering. He states that the "separation of conceptualization and making has not always been the case" and that in traditional crafts "conceptualization and making were inextricably intertwined. The craftsmen did not externalize their ideas in the form of symbolic descriptions; the externalization lay in the material artefact itself." (Dasgupta, p12, 1996).

Lighting design is often referred to as a craft, and my own experiences and discussions with students studying scenography at Chichester reflect the notion of separating concept and creation as being a key step in moving from a wholly creative or discovery based approach to lighting towards an organised and efficient lighting practice as required by the professional industry.

It is one thing to conceive a look for the lighting using a hands-on, fluid way using faders and submasters live, and another to program using a numeric syntax based lighting console. Thinking

visually, looking at spatiality, colour, intensity, shape and shadow and then converting that into numbers is no mean feat and students (and designers) who prefer to work in a purely visual way often struggle with this step.

So that leads us to a common practice in the lighting industry where the design and programming stages are separated and are often different people. Having practiced both lighting live and programming, I have considered what gets lost in the translation? How often did I make compromises because the syntax didn't allow for the design or the way that I conceived the transition of the light?

As a designer specialising in dance, I found one of the most pertinent issues for me lies in movement.

Lighting is all about movement. It is about transition. Transient motions of illumination. What the numerical syntax so often does is force designers and programmers to look at states, moments in time, frames within this continuous motion. And that in itself changes our outlook on lighting; we look cue to cue, we see states, a 'look' on the stage. The sense of movement is interrupted by the constant requirement to stop the action in a freeze frame and ask: "so how do we get there?"

number crunch

What often then becomes assumed is the way that the interface will interpret the move from point A to point B. While the lighting console calculates a linear transition, the designer may have envisioned a subtle curve. These nuances will need to either be lost in compromise, or time spent in painstakingly adjusting figures.

Borgman's technological device

Albert Borgman's writings on the technological device present a cautionary view of our movement towards technology-reliant practice. The "device paradigm" suggests that "technology alienates humans from reality" (Verbeek, 2007), a view which can be both illustrated and argued against in the application of computerised lighting control.

The computerised lighting console can be considered a device in Borgman's terminology since it meets his primary criteria that the technology "disburdens" the user in an activity – the recording of memories and palettes allowing instant recall of states. It can also be seen to illustrate his greatest criticism of the technological device in that it can "fulfill [the] promise of enrichment and disburdenment in such a way, that the disburdenment they offer impedes true enrichment." As previously mentioned, the distancing of the lighting operator from the movement of the lighting results in a sense of removal from the process.

Dr Nick Hunt's paper "A Play of Light" (2001) illustrates this point through a comparison of the lighting operator and orchestra:

"In response to the cue, the lighting operator presses the "go" button – and that's it.

Meanwhile in the orchestra pit, things are very different: whenever music is being played, the musicians are either watching the performers on stage, looking at the other musicians or conductor,

or following the score. Why are the musicians so much more engaged with the live performance compared to the lighting operator? Could the musicians' approach have something to offer the performance of lighting? Might it be useful to compare light and music?" (Hunt, 2001)

Hunt advocates developing control interfaces that "use the full capabilities of the operator to manipulate the lighting in complex and subtle ways in real time." Returning the lighting operator to "engaging practices" (Verbeek, 2007) as prescribed by Borgmann.

Borgmann's position of criticising technological devices for the way that they disengage the user from reality seems to reinforce the reasoning behind the separation of the designer and programmer roles in lighting.

The development of the graphical user interface seen in personal and mobile devices and now integrated into lighting control systems is beginning to address the 'playability' and engagement issues raised by Hunt and Borgmann. As Verbeek elaborates, the use of the device and information technologies facilitates mediation – a bridge between reality and technology. "Engagement, therefore, is not simply made impossible by technologies: devices can be just as engaging as things." (Verbeek, 2007).

It follows then that the development of the graphical user interface began to be introduced to lighting alongside the mainstream adoption of this style of working. Investment in applying the GUI and touchscreen technologies to theatre control programming came only once the mobile device was firmly in the pocket of the masses.

Dasgupta and the relationship between craft and engineering

Dasgupta notes that "technology is born of society – that it is a "social construct"," and that "technical change is inextricably tangled amid the web of economics, commerce and the profit motive" (Dasgupta, p180, 1996).

Adopting the principles of graphical icons and point and click navigation hasn't however eradicated the numerical aspect of programming lighting. While it makes lighting more accessible and intuitive to the mobile-device generation, the practice remains firmly rooted in the numerical addressing and identification of fixtures.

Certain programming exercises such as shape generation and colour mixing are now much faster and more efficient thanks to algorithms and macros built in to the GUI. The ability to select a colour or movement pattern based on visual recognition enables the lighting practitioner to remain in a visual mind-set when creating a look rather than pause to calculate values.

However, the identification of fixtures and the logistics of arranging addresses seem to call for a linear numeric approach. Some manufacturers such as Avolite and Jands have introduced more visual orientated systems for selecting fixtures and visualising DMX addressing. However the source for this information - the designer's lighting plan – remains a 2D numerically coded document. While symbols on the lighting plan are now beginning to be adopted in the GUI, the numbers remain the key identifying feature.

It would seem we cannot escape numbers in lighting.

Dasgupta acknowledges the need for a coherent logistic approach - "Unlike the artist, writer, or scientist, the technologist must be creative in a *responsible* way." (Dasgupta, p185, 1996). This sentiment echoes the dilemma facing the lighting industry. At the end of the day the lighting serves the whole production and as such has a responsibility. In the raw glare of production, the lighting team must be able to access, change, program and operate lighting in a manner that is efficient (both in time and financial cost), effective, supporting as well as contributing to the creative whole.

With these pressures present, the interface of lighting struggles to become a personal affair. The set language of symbols and numbers leave little room for creative expression and personalisation of the interface. However there have been some attempts to create and accommodate different methods of working in the assortment of lighting consoles currently available. Each designer and programmer will develop an affinity for a particular way of working. Some will value the visual interface, while others have developed an ability to consider the physical numerically, as though speaking a second language and find that the visual interface doesn't actually save them much time.

Lost in translation?

In any case there is a level of translation involved and usually that is evidenced in a shift from the language of design to the language of programming.

Katja Kwastek's book "Aesthetics of Interaction in Digital Art" identifies some of the opportunities and obstacles presented by technology in the process of art. To me several of these resonate with the issues I have raised about the shift of designer to programmer. Kwastek raises awareness of "*the fact that technological systems may actually substantially impede or curb interaction*" (xix) observing the limitations and boundaries imposed through technology - specifically programming.

The foreword by Dieter Daniels elaborates that:

"The subjective, contingent factors involved are the behaviour of the individual users, the social interaction between users, and the artist's intentions as they are implemented in the artifact together with the programmer's implementation... ...Together all these factors shape the actors' potential behaviours and approaches to the work, and thus also the interaction processes themselves." (vii)

While this speaks directly to interactive art installations, the same can be said of the lighting environment. Daniels indicates explicitly that programming processes and intentions have an affect both subjectively and objectively, and will shape the relationship of all users of the environment – ie; the designers, performers, director as well as programmer.

Kwastek speaks to the effect of the absence of the artist in their role as author once the technology takes over and asks in what other ways the artist may become present in the work.

"Recipient, observer, mediator or fellow player" (p93) are identified as other ways the artist may be present in a work.

Might we seek to integrate the designer in a later stage in the lighting process – post translation; post programming? Could we mitigate the isolating effects of programming syntaxes and interfaces by returning to the craft once the skills have been set and learned?

The languages of technology require translation. The level to which there are compromises and details lost I propose lies with the level of interaction with the lighting designer. In seeking ways to maintain the presence of the artist in the work can we begin to dissolve the barriers that technology puts up between creation, craft and artefact?

Bibliography

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